Name:

at1119paper: Complete the Square, $b =$ odd (v511)

Example

By completing the square, find both solutions to the given equation:

$$x^2 - 41x = -348$$

Add $\left(\frac{-41}{2}\right)^2$, which equals $\frac{1681}{4}$, to both sides of the equation.

$$x^2 - 41x + \frac{1681}{4} = \frac{289}{4}$$

Factor the left side.

$$\left(x + \frac{-41}{2}\right)^2 = \frac{289}{4}$$

Undo the squaring.

$$x + \frac{-41}{2} = \frac{-17}{2} \quad \text{or} \quad x + \frac{-41}{2} = \frac{17}{2}$$

$$x = \frac{41 - 17}{2} \quad \text{or} \quad x = \frac{41 + 17}{2}$$

$$x = 12 \quad \text{or} \quad x = 29$$

Question 1

By completing the square, find both solutions to the given equation:

$$x^2 - 37x = 1820$$

Question 2

By completing the square, find both solutions to the given equation:

$$x^2 + 23x \;=\; 288$$

Question 3

By completing the square, find both solutions to the given equation:

$$x^2 + 57x \;=\; -392$$